

Summary of meteorological data for stations of the Signal Service, August, 1884.

Stations.	Elevation above sea-level.	Mean barometer corrected for temperature and error.	Departure from normal.	Temperature.		Wind.				Total movement.	Rainfall.	
				Monthly mean.	Maximum.	Date.	Minimum.	Date.	Prevailing direction.			Max. velocity.
New England states.												
Block Island.....	27	30.03	+0.03	67-2	78	15 54 25 sw.	32 ne.	13	7.452	6.41		
Boston.....	142	29.90	+0.03	68-1	84	18 51 25 sw.	24 nw.	24	5.722	5.01		
Eastport.....	61	29.96	+0.06	61-1	86	18 46 25 s.	26 nw.	24	3.133	4.41		
Mount Washington.....	6,279	23.96	+0.04	48-1	65	19 22 25 w.	88 se.	29	20.870	8.63		
New Haven.....	107	29.94	+0.02	69-1	86	20 46 25 s.	21 n.	15	3.957	5.60		
New London.....	47	30.03	+0.03	68-2	86	20 48 25 s.	22 s.	26	3.796	7.13		
Portland.....	45	29.98	+0.04	68-1	88	15 53 28 s.	22 s.	29	5.103	3.98		
Middle Atlantic states.												
Albany.....	75	29.96	+0.02	73.....	92	18 50 25 s.	20 s.	4	3.419	5.27		
Atlantic City.....	13	30.03	+0.00	72 0	89	20 61 8 ne.	27 s.	29	5.808	4.04		
Baltimore.....	45	30.02	+0.01	75-1	94	20 59 25 se.	17 nw.	30	3.237	1.74		
Barnegat.....	22	30.03	+0.01	71 0	86	20 61 11 sw.	32 sw.	29	8.391	5.04		
Cape Henry.....	16	30.04	+0.02	75-1	92	21 65 15 se.	28 n.e.	8.395	2.56			
Cape May.....	27	30.02	+0.01	73 0	86	19 57 25 s.	52 s.	22	8.180	5.30		
Chincoteague.....	8	30.04	+0.02	73 0	91	20 61 13 sw.	36 nw.	30	5.755	1.10		
Delaware Breakwater.....	20	30.03	+0.01	73-1	92	20 66 13 ne.	53 sw.	22	9.192	4.19		
Lynchburg.....	652	29.38	+0.01	75-1	92	30 58 14 ne.	17 nw.	21	1.890	2.85		
New York.....	164	29.89	+0.01	72-1	92	30 56 25 se.	32 e.	30	5.352	8.56		
Norfolk.....	30	30.03	+0.02	76-1	92	20 65 14 ne.	22 n.	21	4.715	2.95		
Philadelphia.....	117	29.94	+0.01	72-2	95	20 54 25 s.	24 sw.	4	5.041	4.30		
Sandy Hook.....	28	30.03	+0.02	72-1	91	20 59 25 s.	40 nw.	30	8.032	5.12		
Washington.....	106	29.96	+0.01	74-1	95	20 57 25 s.	28 w.	21	3.107	1.61		
South Atlantic states.												
Atlanta.....	1,129	28.92	+0.03	75-1	89	27 66 6 e.	35 n.	3	4.939	2.06		
Augusta.....	183	29.88	+0.01	79-1	94	21 64 14 ne.	18 e. n.e.	2	2.218	4.36		
Charleston.....	52	29.98	+0.00	79-2	91	1 68 13 ne.	21 sw.	2	4.505	6.12		
Charlotte.....	808	29.22	+0.02	75-1	92	20 58 14 ne.	14 n. e.	3	3.313	2.68		
Fort Macon.....	12	30.03	+0.03	76-2	85	27 69 15 ne.	26 w.	1	7.462	5.89		
Hatteras.....	43	29.99	+0.00	80-1	94	21 70 24 ne.	24 w.	2	3.451	5.21		
Jacksonville.....	23	30.04	+0.01	76-1	93	30 68 14 ne.	36 ne.	12	10.441	6.58		
Kitty Hawk.....	87	29.95	+0.00	79-2	92	4 69 12 n. e.	24 ne.	23	3.225	5.41		
Savannah.....	34	30.00	+0.01	77-2	88	1 65 14 ne.	26 sw.	4	6.705	8.38		
Smithville.....	52	29.99	+0.01	77-1	90	30 63 15 ne.	19 s.	29	3.432	9.58		
Wilmington.....	35	30.01	+0.04	79-2	96	39 63 7 nw.	23 ne.	16	4.188	1.26		
Eastern Gulf.												
Mobile.....	219	29.81	+0.01	82-2	97	29 62 6 ne.	27 ne.	4	2.829	3.05		
Montgomery.....	52	29.96	+0.01	82 0	93	29 66 8 e.	34 nw.	4	4.372	0.87		
New Orleans.....	30	30.00	+0.01	80 0	94	28 66 7 s.	24 nw.	3	4.385	2.07		
Pensacola.....	244	29.81	+0.01	79-2	98	29 62 11 n.	17 nw.	4	3.045	2.16		
Vicksburg.....	451	29.56	+0.00	76-4	104	28 58 11 e.	24 n.	22	2.720	3.73		
Galveston.....	40	29.98	+0.02	84 0	93	30 71 6 se.	21 ne.	31	6.577	1.77		
Indianola.....	26	29.97	+0.01	82-1	96	30 72 6 se.	52 ne.	30	6.610	1.28		
Little Rock.....	299	29.72	+0.01	78 0	99	28 59 6 ne.	20 n.	30	2.533	3.26		
Palestine.....	533	29.49	+0.02	80-2	98	39 62 12 s.	26 s.	1	5.886	0.66		
Shreveport.....	227	29.80	+0.03	81.....	104	29 64 12 n.	32 w.	1	3.281	1.99		
Ohio valley & Tennessee.												
Chattanooga.....	753	29.25	+0.00	74-2	92	27 61 6 nw.	24 nw.	3	2.798	2.54		
Cincinnati.....	620	29.41	+0.01	75-1	92	17 59 9 w.	18 sw.	3	3.165	2.05		
Columbus.....	805	29.20	+0.00	73 0	92	20 51 11 sw.	29 sw.	3	3.612	0.70		
Indianapolis.....	753	29.25	+0.02	72-2	89	16 50 9 n. s. w.	17 nw.	4	3.357	0.40		
Knoxville.....	980	29.06	+0.01	73-2	93	27 57 6 ne.	28 n.	22	2.803	4.75		
Louisville.....	530	29.48	+0.03	75-2	92	29 57 10 s.	23 w.	21	3.786	4.81		
Memphis.....	321	29.73	+0.04	78-1	97	39 63 11 nw.	19 nw.	3	5.567	1.27		
Nashville.....	549	29.48	+0.04	75-3	94	29 56 6 ne.	58 nw.	29	3.106	2.81		
Pittsburg.....	766	29.24	+0.01	72 0	98	20 52 11 nw.	23 s.	21	3.444	2.94		
Lower lakes.												
Buffalo.....	690	29.28	+0.01	68-2	88	16 46 25 sw.	36 sw.	23	6.180	4.06		
Cleveland.....	660	29.31	+0.01	68-2	89	3 50 11 n.	24 s.	3	5.572	1.55		
Detroit.....	661	29.33	+0.01	69-1	89	8 46 9 s.	25 sw.	3	5.099	1.65		
Erie.....	681	29.31	+0.00	69-1	89	19 51 25 w.	24 w.	30	5.852	2.16		
Oswego.....	334	29.06	+0.04	67-2	93	21 44 25 s.	26 s.	26	5.683	1.71		
Port Huron.....	633	29.32	+0.02	68-2	92	17 47 8 ne.	25 sw.	3	5.034	1.28		
Rochester.....	621	29.37	+0.03	67-3	92	20 42 25 sw.	28 w.	23	6.673	2.52		
Sandusky.....	639	29.36	+0.00	70-2	93	20 54 5 sw.	30 n.	7	7.588	2.48		
Toledo.....	670	29.33	+0.01	70-2	92	17 48 9 s.	24 s. & sw.	5	4.754	1.48		
Upper lakes.												
Alpena.....	609	29.34	+0.05	62-3	91	20 39 9 se.	24 se. & w.	5.975	2.69			
Chicago.....	661	29.32	+0.00	69-3	91	19 51 10 e.	20 sw.	25	4.990	2.50		
Duluth.....	687	29.22	+0.07	64-2	83	13 48 23 ne.	28.....	5.856	6.92			
Escanaba.....	613	29.30	+0.05	65-2	81	14 49 8 s.	36 s.	2	5.792	4.71		
Grand Haven.....	620	29.36	+0.00	66-3	83	17 45 10 nw.	32 s.	18	7.045	2.30		
Mackinaw City.....	695	29.34	+0.04	62.....	89	20 42 8 nw.	25 w.	3	6.000	3.28		
Marquette.....	673	29.25	+0.05	63-2	90	30 39 8 nw.	26.....	5.804	5.46			
Milwaukee.....	667	29.27	+0.01	66-3	85	20 48 8 se.	32 w.	20	6.759	1.84		
Upper Mississippi valley.												
Calumet.....	377	29.68	+0.02	75-3	90	28 57 10 n.	32 nw.	25	4.112	2.74		
Davenport.....	615	29.38	+0.01	70-4	88	19 44 8 nw.	24 s.	3	5.472	3.84		
Des Moines.....	849	29.14	+0.01	69-5	91	19 49 9 s.	20 w. & n.	3	5.758	3.84		
Dubuque.....	665	29.31	+0.00	68-4	90	19 49 8 s.	18.....	29	3.278	4.25		
Keokuk.....	618	29.38	+0.02	72-4	89	20 50 8 s.	29.....	25	5.111	2.74		
La Crosse.....	725	29.22	+0.01	69-3	86	15 52 4 s.	28.....	24	5.106	3.82		
Moorhead.....	923	28.94	+0.04	64-2	88	11 42 21 s.	34 n.	20	7.368	1.27		
Saint Louis.....	583	29.45	+0.03	74-3	92	19 54 9 s.	39 nw.	29	7.411	6.17		
Saint Paul.....	801	29.11	+0.02	69-1	90	15 50 4 s.	46 se.	19	6.190	2.89		
Springfield.....	644	29.38	+0.02	72-3	91	19 49 9 s.	24 nw.	3	5.051	1.54		
Missouri valley.												
Fort Bennett.....	1,510	28.38	+0.04	70-3	98	27 45 4 se.	35 nw.	2	6.996	0.74		
Huron.....	1,305	28.39	+0.01	66-3	89	28 43 21 se.	33 nw.	3	7.030	1.18		
Leavenworth.....	842	28.14	+0.00	72-5	93	28 50 10 s.	18 se.	24	4.187	4.65		
Omaha.....	1,113	28.86	+0.01	70-5	88	19 53 21 s.	27.....	5.644	7.07			
Yankton.....	1,228	28.70	+0.00	69-4	90	28 48 8 s.	28.....	3.113	2.61			

Summary of meteorological data for stations of the Signal Service, August, 1884.—Continued.

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				Monthly mean.	Departure from normal.	Maximum.	Date.	Minimum.	Date.	Prevailing direction.	Max. velocity.		Direction.
<i>Extreme northwest.</i>													
Bismarck .....	1,694	28.15	+0.02	66	-2	91	15 42	7 s.	30 n.	15	5.858	3.80	
Fort Buford .....	1,030	27.92	+0.07	66	-1	100	14 44	3 n.w.	44 n.w.	1	6.269	1.06	
Saint Vincent .....	804	29.03	+0.06	62	-2	89	27 38	23 n.w.	42 s.w.	24	6.354	7.18	
<i>Pacific coast district.</i>													
Cape Mendocino .....	637	29.29	.....	57	.....	69	26 47	1 n.	52 s.e.	2	16.448	0.33	
Los Angeles .....	371	29.55	+0.01	71	-2	102	29 52	28 w.	20 w.	...	3.695	0.02	
Olympia .....	36	29.95	+0.06	66	-5	92	13 47	16 n.	10 s.w.	...	1.225	0.96	
Portland .....	67	29.91	+0.06	68	-2	94	2 51	28 n.	16 n.e.	2	3.258	0.33	
Red Bluff .....	332	29.53	+0.01	82	-2	107	10 55	17 s.	20 s.	4	3.492	Inap.	
Roseburg .....	64	29.82	.....	72	0	100	10 54	18 s.	18 s.w.	16	5.234	Inap.	
Sacramento .....	67	29.84	+0.01	70	-1	92	15 54	19 w.	20 n.w. w.	4	3.367	Inap.	
San Francisco .....	60	29.88	+0.01	59	-1	75	6 52	22 s.w.	33 w.	29	8.351	0.04	
<i>Northern slope.</i>													
Assiniboine .....	2,720	27.16	.....	65	-1	93	10 42	19 n.w.	48 s.e.	27	5.542	2.61	
Cheyenne .....	6,105	24.14	+0.01	61	-5	86	31 40	30 n.w.	36 n.w.	1	6.774	2.07	
Deadwood .....	4,600	25.46	+0.02	61	-5	93	14 40	20 n.e.	15 n.e.	5	2.163	3.07	
Fort Benton .....	2,681	27.22	+0.06	69	-1	99	26 36	20 n.e.	40 w.	1	4.742	0.79	
Fort Custer .....	3,640	26.85	+0.01	68	-3	100	14 43	3 e.	52 n.w.	15	4.750	2.09	
Fort Maginnis .....	4,340	25.64	+0.02	61	.....	89	10 36	20 s.w.	48 n.w.	1	6.740	1.33	
Fort Shaw .....	3,550	26.85	+0.01	64	-1	92	10 36	20 w.	36 n.w.	1	4.658	0.59	
Helena .....	4,044	25.88	.....	67	0	88	26 42	20 s.w.	22 w.	1	4.635	0.47	
Poplar River .....	3,550	26.85	+0.01	64	-1	92	10 36	20 w.	36 n.w.	1	4.658	0.59	
Spokane Falls .....	1,906	27.44	+0.03	70	+5	98	5 44	17 s.w.	16 s.w.	...	2.895	0.54	
<i>Middle slope.</i>													
Denver .....	5,294	24.85	+0.02	68	-3	92	1 51	3 s.	28 w.	1	4.475	1.71	
Dodge City .....	2,517	27.45	+0.01	72	-4	94	28 55	4 s.e.	42 s.e.	1	8.774	4.82	
Fort Elliott .....	2,650	27.29	+0.01	74	0	101	2 54	30 s.e.	40 w.	21	7.024	2.60	
North Platte .....	2,841	27.12	+0.01	68	-5	92	28 48	30 s.e.	36 s.e.	14	6.535	1.73	
Pike's Peak .....	14,134	18.69	+0.02	30	-3	48	1 23	20 w.	52 w.	20	9.113	0.25	
West Las Animas .....	3,899	26.07	.....	70	-3	101	1 52	31 e.	31 e.	7	5.323	2.17	
<i>Southern slope.</i>													
Fort Concho .....	1,909	28.09	.....	81	+2	103	1 60	31 s.	32 n.e.	19	6.170	1.20	
Fort Davis .....	4,925	25.25	.....	73	-2	100	2 58	26 s.w.	24 s.w.	18	3.794	6.70	
Fort Sill .....	1,200	28.76	+0.01	79	-1	102	2 58	5 s.e.	32 n.e.	1	7.101	1.21	
Fort Stockton .....	3,010	27.01	+0.01	79	-1	105	2 62	31 s.w.	31 n.e.	2	7.146	2.75	
<i>Northern plateau.</i>													
Boise City .....	2,750	27.15	+0.02	74	+1	95	30 52	29 n.w.	20 n.w.	18	2.839	0.07	
Dayton .....	1,667	28.24	+0.02	70	-3	102	5 42	16 s.w.	16 s.w.	...	4.320	0.09	
Lewiston .....	708	29.13	.....	74	-2	101	5 48	19 n.e.	20 n.w.	30	3.987	0.06	
<i>Middle plateau.</i>													
Salt Lake City .....	4,348	25.66	+0.02	73	-2	92	4 49	21 n.w.	36 s.w.	16	3.492	0.73	
<i>Southern plateau.</i>													
Camp Thomas .....	2,710	27.19	+0.01	81	+1	106	5 54	19 s.e. w.	.....	.....	.....	2.04	
El Paso .....	3,704	26.27	+0.01	80	+1	110	1 03	26 s.e.	23 n.	6	1.474	3.68	
Fort Apache .....	5,050	25.05	+0.02	68	-1	97	4 42	21 s.e.	32 n.e.	6	3.819	5.49	
Fort Grant .....	4,856	25.26	+0.03	76	-1	97	5 58	24 n.	38 s.	18	3.828	2.51	
Prescott .....	5,389	24.80	+0.03	68	-2	92	1 41	19 s.	34 s.	18	3.693	1.57	
Yuma .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
<i>Rio Grande valley.</i>													
Brownsville .....	59	29.92	+0.01	81	-2	95	12 68	9 s.e.	25 s.e.	19	4.884	0.88	
Rio Grande City .....	230	29.78	+0.04	83	0	105	6 66	9 s.e.	25 s.e.	27	5.392	.....	
<i>Florida peninsula.</i>													
Cedar Keys .....	22	30.60	+0.01	84	-1	92	3 70	5 n.e.	25 s.w.	30	5.202	8.11	
Key West .....	20	30.68	+0.01	84	0	95	1 72	20 s.e.	31 n.e.	19	5.366	3.16	
Sanford .....	36	29.94	+0.01	80	.....	97	1 70	31 n.e.	26 n.e.	26	3.209	11.09	

Mount Forest, Ontario, Canada, 19th.

Poplar River, Montana, 20th: an auroral arch, with streamers reaching an altitude of 45°, was visible from 11 to 11.45 p. m.

Vevay, Indiana, 20th: a faint aurora, of crimson color, first appeared in the northwest at 8 p. m.; at 8.30 p. m. it passed to northeast. Diffuse flashes of white light issued from the north and extended to an altitude of 25°.

Cresco, Iowa, 20th: faint auroral beams were observed in the north at 9 p. m.

Fort Totten, Dakota, 21st: an auroral arch was visible in the north from 9.50 p. m. until midnight; altitude 25°, azimuth, 100°.

Mount Forest, Ontario, Canada, 21st.

Fort Yates, Dakota, 23d: a faint auroral display was observed at 11 p. m.

Vevay, Indiana, 23d.

#### THUNDER-STORMS.

Thunder-storms are reported to have occurred in the various districts on the following dates:

*New England.*—1st, 2d, 4th, 5th, 6th, 9th, 11th to 15th, 17th to 24th, 26th to 31st.

*Middle Atlantic states.*—1st to 5th, 7th to 10th, 13th, 14th, 18th to 23d, 25th to 31st.

*South Atlantic states.*—1st to 12th, 15th, 16th, 20th to 31st.

*Florida peninsula.*—1st to 31st.

*Eastern Gulf states.*—1st to 4th, 8th to 11th, 17th to 27th, 29th, 30th, 31st.

*Western Gulf states.*—1st, 3d to 7th, 9th to 30th.

*Rio Grande valley.*—3d to 7th, 10th, 14th, 15th, 18th, 21st, 22d, 23d, 30th.

*Tennessee.*—2d, 3d, 4th, 6th, 7th, 8th, 11th, 13th, 14th, 20th to 23d, 25th, 28th, 29th, 30th.

*Ohio valley.*—3d, 4th, 5th, 7th, 9th, 10th, 16th, 17th, 20th to 23d, 25th, 26th, 28th, 29th, 30th.

*Lower lake region.*—3d, 4th, 6th, 7th, 8th, 10th to 14th, 17th to 23d, 25th, 26th, 28th to 31st.

*Upper lake region.*—2d, 3d, 4th, 6th, 10th, 11th, 14th, 16th to 25th, 27th to 30th.

*Extreme northwest.*—1st, 2d, 5th, 12th to 19th, 22d, 24th, 27th, 28th, 31st.

*Upper Mississippi valley.*—1st, 2d, 3d, 5th, 6th, 10th, 14th, 16th to 25th, 27th, 28th, 29th.

*Missouri valley.*—1st to 5th, 7th, 11th to 22d, 24th to 28th.

*Northern slope.*—6th, 11th to 22d, 26th, 28th, 31st.

*Middle slope.*—1st to 7th, 10th to 24th, 26th to 29th.

*Southern slope.*—6th, 7th, 10th, 14th, 17th to 21st, 24th, 25th, 26th, 30th.

*Southern plateau.*—1st to 31st.

*Middle plateau.*—2d, 3d, 4th, 8th to 11th, 15th to 19th, 21st.

*Northern plateau.*—5th, 11th, 12th, 13th, 17th, 26th.

*North Pacific coast region.*—2d to 6th, 11th, 23d.

*Middle Pacific coast region.*—Salinas City, 3d; Red Bluff, 9th, 10th; Princeton, 9th, 10th, 11th; Hydesville, 11th.

*South Pacific coast region.*—Los Angeles, 3d; Cahuenga valley (near Los Angeles), and Poway, 3d, 21st, 22d; San Diego, 15th, 21st, 22d.

Professor H. A. Hazen, of the Signal Service, has prepared the following notes on thunder-storms for August, 1884:

Reports of special voluntary observers from north of 35° N. lat., and east of 102° W. of Greenwich:

The total number of reports filed up to September 18 this 2,226. Of these, the largest number were of storms on August 21st, 256; 22d, 183; 30th, 150; 4th, 194; 29th, 126; 20th, 104; 28th, 72.

The following general résumé is given, considering only the time of beginning of thunder:

On 2d, action was general in Minnesota, Wisconsin, Iowa, and Illinois. At 3 p. m., Washington time, storms prevailed in southeast of storm-centre and at a mean distance of 380 miles. At 11 p. m. they were south-southeast at a distance of 440 miles. On the morning of the 3d general action prevailed to the south of "low" at a mean distance of 600 miles. On the 4th general action is noted in Pennsylvania, New Jersey, Maryland, and Virginia, at a distance of 510 miles. In this instance the storms were very

numerous, beginning at 1 p. m., only two records having been received before that hour; there seems also to have been rather of an abrupt break at 7 p. m., there being only one record, and that in South Carolina, after that hour. On the 20th general action took place in Wisconsin, Illinois, Indiana, Iowa, and Missouri, to the south of "low" at a distance of 450 miles. Records begin at noon and end, as in the last case, at 7 p. m. Only one observation was recorded after 8 p. m., and that was in Arkansas.

On the 21st action was very general throughout the Ohio valley and middle Atlantic states. These storms began at 11 a. m., and continued up to 7 p. m. Mean distance from "low" of the storms in the former region was 660 miles to south-southwest, and in the latter region 470 miles to south.

On the 22d general action occurred, south and southwest of "low," and at a distance of 540 miles.

On the 28th general action is found at 7 a. m., and about 350 miles to southeast of "low."

On the 29th there were two distinct periods of general action; the first at 7 a. m., 550 miles south of "low," and the other about twelve hours later to the south and southwest of "low," distant 500 miles.

On the 30th general action is noted from 5 to 8 p. m. in the middle Atlantic states at a mean distance from "low" of 600 miles, and a mean direction of south.

The mean direction of 900 storms in this month was a very little west of south, and the mean distance from "low" was 515 miles.

#### ELECTRICAL PHENOMENA.

On the summit of Pike's Peak, on the 15th, the telegraph wires and other metallic objects produced a singular noise, being due to atmospheric electricity.

The observer at Fort Craig, New Mexico, reports the following: "A curious phenomenon was witnessed on the 17th, beginning half an hour before sunset and lasting one hour thereafter. A bright luminous arch, 1° in width and about 140° in length, was observed on the western horizon. During the time above mentioned the clouds were highly charged with electricity, and it was raining hard between the observer and the setting sun."

Mount Washington, New Hampshire: at 7.25 p. m. on the 26th the telegraph instruments were damaged, and the observer was severely stunned. As only distant lightning was observed previous to that time, the "cutting out" of the instruments, as is usually done during thunder storms, was not considered necessary.

#### OPTICAL PHENOMENA.

##### SOLAR HALOS.

Solar halos were observed in the various districts on the following dates:

*New England.*—12th, 18th, 20th.

*Middle Atlantic states.*—1st, 4th, 6th, 12th, 16th, 17th, 21st, 23d, 24th, 25th, 27th, 28th.

*South Atlantic states.*—6th, 15th, 17th, 21st, 27th, 28th, 30th.

*Florida peninsula.*—6th, 10th to 13th.

*Eastern Gulf states.*—3d, 6th, 7th, 8th, 10th, 24th.

*Western Gulf states.*—3d, 9th to 13th, 16th, 18th, 19th, 22d, 23d, 24th.

*Tennessee.*—6th, 21st, 22d, 25th, 27th, 28th, 29th.

*Ohio valley.*—3d, 5th, 6th, 12th, 15th.

*Lower lake region.*—1st, 3d, 24th, 25th, 27th, 28th.

*Upper lake region.*—24th, 27th.

*Extreme northwest.*—17th, 24th, 31st.

*Upper Mississippi valley.*—1st, 3d, 23d, 24th, 27th, 29th.

*Missouri valley.*—5th, 23d, 27th.

*Middle slope.*—9th, 10th, 15th, 18th, 20th, 21st, 24th, 25th, 26th.

*Southern plateau.*—9th, 21st.

*Middle plateau.*—3d, 12th.

*North Pacific coast region.*—29th.

*Middle Pacific coast region.*—1st, 6th, 13th.

##### LUNAR HALOS.

Lunar halos were observed in the various districts on the following dates:

*New England.*—1st, 3d, 28th.

*Middle Atlantic states.*—1st to 7th, 22d, 26th, 28th, 29th.

*South Atlantic states.*—2d, 3d, 4th, 11th, 27th, 28th, 30th, 31st.